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TITLE: MOM CAPACITIVE ELEMENT

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ABSTRACT:

PURPOSE: To decrease the area of electrode required for obtaining a necessary capacitance by composing a lower electrode of a metal layer, e.g. single crystal Al, superposed by a high melting point metal while composing a dielectric of a high melting point metal oxide thereby increasing capacitance per unit area.

CONSTITUTION: Single crystal Al, is employed in the formation of a lower electrode 2 which is coated with a thin film 3 of amorphous Mo having high melting point. Thickness of the thin Mo film 3 depends on the temperature for forming an interlayer insulation film 4 and

crystallization is accelerated as the temperature rises thus forming micro-irregularities.

Ta<sub>2</sub>O<sub>5</sub> is employed in the formation of dielectric 1 in order

to suppress mutual diffusion of Al and Ta. Single crystal Al film or

polycrystalline Al film is employed in the formation of an upper electrode 2'.

In order to suppress mutual diffusion of the upper electrode 2' and the dielectric 1, a TiN film 8 is deposited as a barrier metal. This constitution

allows employment of thin Ta<sub>2</sub>O<sub>5</sub> film as a single layer,

reduces leak current, and increases capacitance per unit area.

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